

### **REMARKS**

As of the filing of the present reply, claims 1-19 were pending in the above-identified US Patent Application.

In the Office Action, the Examiner requested that Applicants update the specification to reflect the parentage of the application, and rejected all of the pending claims under 35 USC §103. In the present reply, Applicants have amended the specification and claims as set forth above. More particularly:

The specification has been amended to cite its parent as US Patent 7150922, identify its parent as a CIP of US Patent Application 09/524,227 to Spitsberg, and correct a typographical error.

Independent claims 1 and 10 have been amended to clarify that the overlay coating (24) is an intermetallic overlay coating (24) and to specify that the new grains (32) are predominantly equiaxed. Support for the former amendment can be found in Applicants' specification at [Para 10] and [Para 0027], and support for the latter amendment can be found in Applicants' specification at [Para 32], [Para 34], [Para 35], etc.

Independent claim 1 was further amended to clarify that the overlay coating (24) contains at least one reactive element, as disclosed at [Para 10].

Independent claim 1 has also been amended to recite that the as-

deposited grain boundaries (44) contain precipitates (40) rich in the at least one reactive element, and the overlay coating (24) is recrystallized to form the new grains (32). Support for these amendments can be found in Applicants' specification at [Para 36]-[Para 38], and original claims 2 and 3.

Dependent claim 3 has been amended to specify a deposition temperature of at least 1050°C, as recited in [Para 38].

Finally, dependent claim 8 has been amended for consistency with its parent claim 1.

Applicants believe that the above amendments do not present new matter. Favorable reconsideration and allowance of claims 1-19 are respectfully requested in view of the above amendments and the following remarks.

### **Double Patenting Rejections**

The Examiner rejected claims 1-19 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 7,244,467 to Grossman et al. Applicants hereby acknowledge that the present application and Grossman et al. are commonly assigned. A terminal disclaimer pursuant to 37 CFR §1.321(b) is

submitted herewith which terminally disclaims that portion of any patent which issues from the above-identified application which extends beyond the termination date of Grossman et al. Accordingly, withdrawal of the obviousness-type double patenting rejection is respectfully requested.

### **Rejections under 35 USC §103**

Independent claims 1 and 10 and their dependent claims 2, 4-9, and 11-19 were rejected as being unpatentable over Applicants' admitted prior art (AAPA) in view of Japanese patent JP 01-180959 A to Nakamura et al. (Nakamura) and U.S. Patent No. 6,153,313 to Rigney et al. (Rigney), and dependent claim 3 was rejected as unpatentable over the AAPA, Nakamura, and Rigney in further view of U.S. Patent No. to 6,375,425 to Lee et al. (Lee). Applicants respectfully request reconsideration of these rejections in view of the following comments.

Under the first §103 reject, the AAPA was cited for disclosing a method that entails "depositing a diffusion aluminide bond coat." The Examiner acknowledged that the AAPA "does not disclose the aluminide coating comprising a beta-nickel aluminide overcoat," but then cited Rigney as

teaching “beta-phase nickel aluminide coatings” are known in the art and cited Nakamura as teaching “a diffusion coating layer” that is peened and recrystallized to improve various mechanical properties. The Examiner concluded that it would be obvious to have “modified [the] AAPA to use the beta phase nickel aluminide coating as suggested by Rigney” and “modify[] the grain structure of the beta phase nickel aluminide bond coat by recrystallizing at least a surface region of the aluminide bond coat ... as taught by Nakamura et al.”

However, the rejection discusses two entirely different types of coatings - diffusion coatings and overlay coatings - as if they were physically, chemically, and microstructurally the same and will respond the same to surface and thermal treatments. Passages cited from Applicants’ specification to argue that the AAPA teaches a “diffusion aluminide bond coat” are instead directed to a nickel aluminide (beta-phase (NiAl) intermetallic) overlay bond coat, whose deposition process and whose physical, chemical and microstructural properties differ markedly from diffusion aluminide bond coats.<sup>2</sup>

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<sup>2</sup> Applicants are uncertain of the passages cited from their specification. The passages are cited by page and line instead of by paragraph number, and some of the cited passages exceed the number of lines on the pages of the application as filed by Applicants and as shown in the USPTO PAIR system.

For example, see Applicants' specification at [Para 8] and [Para 12], as well as Rigney.

Nakamura is directed solely to recrystallizing a diffusion coating, which contains multiple phases (again, see Applicants' specification at [Para 8]). It is unknown from Nakamura as to whether Nakamura's process would induce recrystallization in a single (beta) phase NiAl overlay coating and, if induced, what effect recrystallization might have on the AAPA's and Rigney's beta-phase NiAl overlay coatings. Applicants' own teachings - originating with a suggestion in parent 09/524,227 to Spitsberg and substantiated by testing reported in the present application - provide the only basis for proposing why and how a beta-phase nickel aluminide overlay coating would benefit from recrystallization.

For the above reasons, Applicants respectfully request withdrawal of the first §103 rejection.

In view of the above remarks, Applicants believe that Lee cannot be said to supplement the teachings of the AAPA, Rigney and Nakamura in order to arrive at the invention recited in claim 3. As an initial matter, Lee was filed after the priority date of the present invention, and therefore is believed to be

an improper reference. Second, Lee does not teach anything regarding nickel aluminide overlay coatings. Instead, Lee's teachings regarding deposition temperatures are limited to MCrAl(X) overlay coatings, which are not intermetallic coatings but instead are solid solution coatings containing multiple intermetallic phases. For these reasons, Applicants also respectfully request withdrawal of the second §103 rejection.

### **Closing**

In view of the above, Applicants believe that the claims define patentable novelty over all the references, alone or in combination, of record. It is therefore respectfully requested that this patent application be given favorable reconsideration.

Though the above remarks are primarily limited to certain limitations of the claims, Applicants believe that other limitations of the claims provide additional grounds of patentability over the cited references, and Applicants reserve the right to present these additional grounds at a later time if necessary.

Should the Examiner have any questions with respect to any matter

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Technology Center 1792  
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In Response to Office Action dated March 28, 2008

now of record, Applicants' representative may be reached at (219) 462-4999.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Domenica N.S. Hartman". The signature is fluid and cursive, with the first name "Domenica" written in a larger, more prominent script than the last name "Hartman".

Domenica N.S. Hartman  
Reg. No. 32,701

May 27, 2008  
Hartman & Hartman, P.C.  
Valparaiso, Indiana 46383  
TEL.: (219) 462-4999  
FAX: (219) 464-1166

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